

Title (en)
EARTH LEAKAGE CIRCUIT BREAKER BASED ON THE RATIO OF A SPECIFIC HARMONIC CURRENT COMPONENT TO THE
FUNDAMENTAL WAVE CURRENT COMPONENT

Title (de)
ERDSCHLUSSSCHUTZSCHALTER BASIEREND AUF DEM VERHÄLTNIS ZWISCHEN EINER HARMONISCHEN KOMPONENTE DES
STROMES UND DER KOMPONENT DER GRUNDSCHWINGUNG DES STROMES

Title (fr)
DISJONCTEUR DE FUITE À LA TERRE BASÉ SUR LA RELATION ENTRE UNE COMPOSANTE HARMONIQUE DU COURANT ET LA
COMPOSANTE FONDAMENTALE DU COURANT

Publication
EP 3496222 A1 20190612 (EN)

Application
EP 18209668 A 20181130

Priority
KR 20170164259 A 20171201

Abstract (en)
An earth leakage circuit breaker includes a current sensing unit configured to sense current in a circuit, a converter configured to detect a
fundamental wave component and a specific harmonic component from the sensed current, the specific harmonic component being one of a
plurality of harmonic components, and a controller. The controller is configured to compare a harmonic component ratio with a threshold component
ratio, to determine whether the sensed current is abnormal current, and to control cutoff of the circuit according to the result of determination. The
harmonic component ratio is a ratio of the specific harmonic component to the fundamental wave component. The converter is configured to convert
the sensed current from an analog signal into digital data and to perform Fourier transform with respect to the converted digital data to detect the
fundamental wave component and the specific harmonic component.

IPC 8 full level
H02H 3/16 (2006.01); **G01R 19/25** (2006.01); **G01R 31/02** (2006.01); **H02H 1/00** (2006.01); **H02H 3/33** (2006.01); **H02H 3/52** (2006.01)

CPC (source: CN EP KR US)
G01R 19/16571 (2013.01 - KR); **G01R 31/52** (2020.01 - EP US); **H01H 83/02** (2013.01 - CN KR); **H02H 1/0007** (2013.01 - EP);
H02H 3/14 (2013.01 - CN); **H02H 3/162** (2013.01 - EP); **H02H 3/32** (2013.01 - US); **H02H 3/33** (2013.01 - EP US); **H02H 3/52** (2013.01 - EP US);
G01R 19/2513 (2013.01 - EP); **G01R 23/16** (2013.01 - EP); **H02H 1/0007** (2013.01 - US); **H02H 3/05** (2013.01 - US)

Citation (search report)
• [YA] GB 2019677 A 19791031 - WESTINGHOUSE ELECTRIC CORP
• [YA] JP 2017159720 A 20170914 - NISHINIPPON RYOKAKU TETSUDO KK, et al
• [YA] US 2004243288 A1 20041202 - KITO YUJI [JP], et al
• [YA] KR 20100132316 A 20101217 - PMD NETWORKS INC [KR]

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)
BA ME

DOCDB simple family (publication)
EP 3496222 A1 20190612; **EP 3496222 B1 20220727**; CN 110011271 A 20190712; CN 110011271 B 20210604; KR 101956571 B1 20190311;
US 10742018 B2 20200811; US 2019173272 A1 20190606

DOCDB simple family (application)
EP 18209668 A 20181130; CN 201811466339 A 20181203; KR 20170164259 A 20171201; US 201816193861 A 20181116